

What Is Claimed Is:

1. A method for setting a channel of variable bandwidth between a mobile station and a base station performing
5 radio communications with said mobile station, and between said base station and a base station controller communicating with said base station and controlling said base station, comprising the steps of:
- in said base station controller, sending a request for
10 a bandwidth required for said channel to said base station;
- in said base station, upon receiving said request, returning a response of an allocatable bandwidth equal to or lower than said required bandwidth, to said base station controller; and
- 15 in said base station controller, upon receiving said response, setting said channel of variable bandwidth between said mobile station and said base station, and between said base station and said base station controller, according to said allocatable bandwidth.
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2. The channel setting method according to claim 1, wherein said base station controller has bandwidth management information for managing the bandwidths of said channels of variable bandwidth for each respective mobile
25 station, and further comprising the step of, after receiving said response, in said base station controller, updating said bandwidth management information for the

mobile station for which said variable bandwidth has been set, by setting said allocatable bandwidth in the bandwidth management information thereof.

5 3. The channel setting method according to claim 1, wherein said base station controller has recommended bandwidths provided for each respective mobile station and recommended to that mobile station, and further comprising the step of, before sending said required bandwidth, in
10 said base station controller, comparing said recommended bandwidth with said required bandwidth and applying the smaller of these bandwidths to said required bandwidth.

4. The channel setting method according to claim 3,
15 wherein said recommended bandwidth is set to a larger value, the higher the priority of bandwidth allocation assigned to each respective mobile station, said priority being calculated by means of the formula,

$$\{(T \times K_T + A \times K_A) + (D \times K_D + S \times K_S)\} \times K$$

20 where T is a use time of said channel of variable bandwidth, D is a dormant number, S is a short-burst data reception/transmission number, A is an allocation reject number of said channel of variable bandwidth, and K, K_T , K_A , K_D , and K_S are weighting coefficients.

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5. A channel setting method in a mobile communication system in which a first channel of fixed bandwidth, and a

second channel of variable bandwidth established according to requirements, are set up between a mobile station and a plurality of base stations performing radio communications with said mobile station, and between said plurality of
5 base stations and a base station controller which communicates with said plurality of base stations and controls said base stations, said channel setting method being a method for setting said second channel during hand-off where said mobile station is communicating with said
10 plurality of base stations by means of said first channel, and comprising the steps of:

in said base station controller, sending a request for a bandwidth required for said second channel to said plurality of base stations communicating by means of said
15 first channel;

in said plurality of base stations, upon receiving said request, returning a response of an allocatable bandwidth equal to or lower than said requested bandwidth, to said base station controller; and

20 in said base station controller, upon receiving said responses, setting said second channels between said mobile station and said plurality of base stations, and between said plurality of base stations and said base station controller, according to the smallest bandwidth of said
25 plurality of allocatable bandwidths.

6. A channel setting method in a mobile communication system in which a first channel of fixed bandwidth, and a second channel of variable bandwidth established according to requirements, are set up between a mobile station and a first and a second base station performing radio communications with said mobile station, and between said first and second base stations and a base station controller which communicates with said base stations and controls said base stations, said channel setting method being a method for setting said second channel between said mobile station and said second base station at the start of handoff where said mobile station starts to communicate simultaneously with said second base station whilst also communicating with said first base station by means of said first and second channel, and comprising the steps of:

in said base station controller, sending a request for a bandwidth required for said second channel to said second base station;

in said second base station, upon receiving said request, returning a response of an allocatable bandwidth equal to or lower than said requested bandwidth, to said base station controller; and

in said base station controller, upon receiving said response from said second base station,

comparing said allocatable bandwidth with the bandwidth of the second channel established to said first base station; and

in a case where the former bandwidth is lower than the latter bandwidth, changing the bandwidth of the second channel established to said first base station to the former bandwidth, and also establishing said second channel between said mobile station and said second base station, and between said second base station and said base station controller, in accordance with said former bandwidth.

7. The channel setting method according to claim 6, further comprising the step of:

in said base station controller, setting said second channel between said mobile station and said second base station and between said second base station and said base station controller, according to the bandwidth of the second channel established with said first base station, in a case where said allocatable bandwidth is greater than the bandwidth of the second channel established with said first base station.

8. A method for setting a channel of variable bandwidth between a mobile station and a base station performing radio communications with said mobile station, and between said base station and a base station controller which communicates with said base station and controls said base station, said method being performed under control of said base station controller, and comprising the steps of:

holding a bandwidth allocation priority for said mobile station and a recommended bandwidth set and recommended with respect to said priority;

setting said channel by comparing said recommended
5 bandwidth with a requested bandwidth for said channel;

if the smaller bandwidth thereof can be ensured,
ensuring said smaller bandwidth; and

if said smaller bandwidth cannot be ensured, reducing
the bandwidth of a channel established to another mobile
10 station of lower rank of said priority than the mobile
station for which said smaller bandwidth is being ensured,
and ensuring said smaller bandwidth.

9. A method for setting a channel of variable bandwidth
15 between a mobile station and a base station performing
radio communications with said mobile station, and between
said base station and a base station controller which
communicates with said base station and controls said base
station, said method being performed under control of said
20 base station controller, and comprising the steps of:

sending a request for a bandwidth required for said
channel to said base station;

receiving a response of an allocatable bandwidth equal
to or lower than said required bandwidth, as sent by said
25 base station; and

setting said channel of variable bandwidth between
said mobile station and said base station, and between said

base station and said base station controller, according to said received allocatable bandwidth.

10. A channel setting method in a mobile communication
5 system in which a first channel of fixed bandwidth, and a second channel of variable bandwidth established according to requirements, are set up between a mobile station and a plurality of base stations performing radio communications with said mobile station, and between said plurality of
10 base stations and a base station controller which communicates with said plurality of base stations and controls said base stations, said channel setting method being a method for setting said second channel during hand-off where said mobile station is communicating with said
15 plurality of base stations by means of said first channel, being performed under control of said base station controller, and comprising the steps of:

 sending a request for a bandwidth required for said second channel to said plurality of base stations
20 communicating by means of said first channel;

 receiving a response of an allocatable bandwidth equal to or lower than said requested bandwidth, as sent by said plurality of base stations; and

 setting said second channels between said mobile
25 station and said plurality of base stations, and between said plurality of base stations and said base station

controller, according to the smallest bandwidth of said received plurality of allocatable bandwidths.

11. A channel setting method in a mobile communication system in which a first channel of fixed bandwidth, and a second channel of variable bandwidth established according to requirements, are set up between a mobile station and a first and a second base station performing radio communications with said mobile station, and between said first and second base stations and a base station controller which communicates with said base stations and controls said base stations, said channel setting method being a method for setting said second channel between said mobile station and said second base station at the start of handoff where said mobile station starts to communicate simultaneously with said second base station whilst also communicating with said first base station by means of said first and second channel, being performed under control of said base station controller, and comprising the steps of:

20 sending a request for a bandwidth required for said second channel to said second base station;

 receiving a response of an allocatable bandwidth equal to or lower than said requested bandwidth, as sent by said second base station; and

25 comparing said allocatable bandwidth with the bandwidth of the second channel established to said first base station, and, if the former bandwidth is lower than

the latter bandwidth, changing the bandwidth of the second channel established to said first base station to the former bandwidth, and also establishing said second channel between said mobile station and said second base station
5 and between said second base station and said base station controller, in accordance with said former bandwidth.

12. A mobile communication system comprising a mobile station, a base station performing radio communications
10 with said mobile station, and a base station controller communicating with said base station and controlling said base station, in which a channel of variable bandwidth is established between said mobile station and said base
station, and between said base station and said base
15 station controller,

wherein said base station controller comprises:

a transmitting portion for sending a request for a bandwidth required for said channel to said base station;

a first receiving portion for receiving a response of
20 an allocatable bandwidth, sent by said base station in response to the transmission made by said transmitting portion; and

a setting portion for setting said channel between said mobile station and said base station, and between said
25 base station and said base station controller, according to said allocatable bandwidth received by said first receiving portion; and

said base station comprises:

a second receiving portion for receiving said request transmitted by said transmitting portion of said base station controller; and

5 a response portion for returning said response of said allocatable bandwidth which is equal to or lower than said requested bandwidth received via said second receiving portion, to said base station controller.

10 13. A mobile communication system comprising a mobile station, a plurality of base stations performing radio communications with said mobile station, and a base station controller communicating with said plurality of base stations and controlling said plurality of base stations,
15 in which a first channel of fixed bandwidth, and a second channel of variable bandwidth established according to requirements, are set up between a mobile station and said plurality of base stations, and between said plurality of base stations and said base station controller,

20 wherein said base station controller comprises:

a transmitting portion for sending a request for a bandwidth required for said second channel to said plurality of base stations communicating by means of said first channel, when it is necessary to establish said
25 second channel during hand-off where said mobile station is communicating with said plurality of base stations by means of said first channel,

a first receiving portion for receiving a response of
an allocatable bandwidth equal to or lower than said
requested bandwidth, as transmitted by said base stations
in response to the transmission from said transmitting
5 portion; and

a setting portion for setting said second channels
between said mobile station and said plurality of base
stations, and between said plurality of base stations and
said base station controller, according to the smallest
10 bandwidth of said plurality of allocatable bandwidths
received via said first receiving portion; and

said plurality of base stations comprise,
respectively:

a second receiving portion for receiving said request;
15 and

a response portion for returning said response of said
allocatable bandwidth equal to or lower than the requested
bandwidth received via said second receiving section, to
said base station controller.

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14. A mobile communication system comprising a mobile
station, a first and second base stations performing radio
communications with said mobile station, and a base station
controller communicating with said first and second base
25 stations and controlling said base stations, wherein a
first channel of fixed bandwidth, and a second channel of
variable bandwidth established according to requirements,

are set up between said mobile station and said first and second base station, and between said first and second base stations and said base station controller,

wherein said base station controller comprises:

5 a transmitting portion for sending a request for a bandwidth required for said second channel to said second base station, at the start of handoff where said mobile station starts to communicate simultaneously with said second base station whilst also communicating with said first base station by means of said first and second channels;

10 a first receiving portion for receiving a response of an allocatable bandwidth equal to or lower than said requested bandwidth, from the second base station, in response to the transmission from said transmitting portion;

15 a changing portion for comparing the allocatable bandwidth received by said first receiving portion with the bandwidth of the second channel established to said first base station, and, if the former bandwidth is lower than the latter bandwidth, changing the bandwidth of the second channel established to said first base station to the former bandwidth; and

25 a setting portion for setting said second channel between said mobile station and said second base station, and between said second base station and said base station controller, in accordance with said former bandwidth; and

said second base station comprises:

a second receiving portion for receiving said request sent by said transmitting portion of said base station controller; and

- 5 a response portion for returning said response of said allocatable bandwidth equal to or lower than said requested bandwidth as received via said second receiving portion, to said base station controller.

- 10 15. A base station controller for establishing a channel of variable bandwidth between a mobile station and a base station performing radio communications with said mobile station, and between said base station and said base station controller which communicates with said base station and controls said base station, comprising:

a transmitting portion for sending a request for a bandwidth required for said channel to said base station;

- a receiving portion for receiving a response of an allocatable bandwidth equal to or lower than said requested bandwidth, from said base station; and

- 20 a channel setting portion for setting said channel of variable bandwidth between said mobile station and said base station, and between said base station and said base station controller, according to said allocatable bandwidth received by said receiving portion.

16. A base station controller in a mobile communication system comprising a mobile station, a plurality of base stations performing radio communications with said mobile station, and said base station controller communicating
5 with said plurality of base stations and controlling said base stations, a first channel of fixed bandwidth and a second channel of variable bandwidth established according to requirements being set up between said mobile station and said plurality of base stations, and between said base
10 stations and said base station controller in said mobile communication system, comprising:

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a transmitting portion for sending a response for a bandwidth required for said second channel to said plurality of base stations communicating by means of said
15 first channel, when it is necessary to establish said second channel during hand-off where said mobile station is communicating with said plurality of base stations by means of said first channel;

a first receiving portion for receiving a response of
20 an allocatable bandwidth, as transmitted by said base stations in response to the transmission from said transmitting portion; and

a setting portion for setting said second channels between said mobile station and said plurality of base
25 stations, and between said plurality of base stations and said base station controller, according to the smallest

bandwidth of said plurality of allocatable bandwidths
received via said first receiving portion.

17. A base station controller in a mobile communication
5 system comprising a mobile station, a first and a second
base station performing radio communications with said
mobile station, and said base station controller
communicating with said first and second base stations and
controlling said base stations, a first channel of fixed
10 bandwidth and a second channel of variable bandwidth
established according to requirements being set up between
said mobile station and said first and second base stations,
and between said first and second base stations and said
base station controller, comprising:

15 a transmitting portion for sending a request for a
bandwidth required for said second channel to said second
base station, at the start of handoff where said mobile
station starts to communicate simultaneously with said
second base station whilst also communicating with said
20 first base station by means of said first and second
channels;

a first receiving portion for receiving a response of
an allocatable bandwidth, as sent from the second base
station in response to the transmission from said
25 transmitting portion;

a changing portion for comparing the allocatable
bandwidth received via said first receiving portion with

the bandwidth of the second channel established to said first base station, and, if the former bandwidth is lower than the latter bandwidth, changing the bandwidth of the second channel established to said first base station to the former bandwidth; and

a setting portion for setting said second channel between said mobile station and said second base station, and between said second base station and said base station controller, in accordance with said former bandwidth.

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18. A base station controller for establishing channels of variable bandwidth between a mobile station and a base station performing radio communications with said mobile station, and between said base station and said base station controller communicating with said base station and controlling said base station, comprising:

a holding portion for holding a bandwidth allocation priority for said mobile station and a recommended bandwidth set and recommended in accordance with said priority;

a setting portion for comparing said recommended bandwidth with said requested bandwidth, and setting said channel ensuring the smaller of these bandwidths; and

a bandwidth adjusting portion for reducing the bandwidth of said channel established to another mobile station of lower priority than the mobile station for which

said smaller bandwidth is to be ensured, if said smaller bandwidth cannot be ensured.